C. Remarks

The claims are 1-4 and 6-8, with claims 1 and 6 being independent. Claims 1 and 6 have been amended to clarify the invention. New claims 7 and 8 have been added. Support for those amendments can be found throughout the originally filed specification; see, for example, page 10, line 25+, page 14, line 20+, etc. No new matter has been added. Reconsideration of the present claims is respectfully requested.

Upon reviewing the present file, Applicants noticed that the initialled PTO Form 1449 had not been returned for the Information Disclosure Statement filed November 27, 2001. Accordingly, Applicants hereby request its return.

Claims 1, 2 and 6 stand rejected under 35 U.S.C. §103(a) as being obvious over Masi (U.S. Patent No. 3,844,637) in view of Hanna (U.S. Patent No. 6,174,455). Claim 3 stands rejected under 35 U.S.C. §103(a) as being obvious over Masi in view of Hanna and further in view of Bock (U.S. Patent No. 6,437,123). Claim 4 stands rejected under 35 U.S.C. §103(a) as being obvious over Masi in view of Hanna and further in view of Applicants' prior art (Figure 3 of present drawings). Applicants respectfully traverse these rejections.

Applicants again believe that a brief review of the key features and advantages of the present invention would be helpful prior to addressing the merits of the prior art rejections. The present invention is directed to a luminescence device comprising a pair of electrodes and at least one organic compound layer. Importantly, an organic compound layer comprises (a) a mixture of a liquid crystal compound having an electronic carrier-transporting function and a phosphorescent function and (b) an organic phosphorescent compound. Because both the organic phosphorescent compound and the

liquid crystal compound of the present invention have phosphorescent function, energy transfer therebetween is performed smoothly and highly effectively.

In addition, as now presently claimed, the organic phosphorescent compound is an organic metallic coordination compound having a heavy metal center, and phosphorescence attributable thereto is produced by passing a current between the electrodes. Use of such a heavy metal coordination compound provides a higher luminescence (phosphorescence) efficiency, as transfer from a triplet exciton state is effectively utilized. More specifically, the presence of a heavy metal allows for strong spin-orbit coupling, thereby allowing the transition. By virtue of this constitution, the present inventive luminescence devices achieve a higher luminescence efficiency than that achieved in conventional devices.

In the Response to Arguments section of the Office Action, the Examiner posits that Applicants' prior arguments are not persuasive because "fluorescent" and "phosphorescent" have the same meaning. Applicants respectfully disagree; "fluorescent" and "phosphorescent" are not interchangeable. Merriam-Webster's 11th Collegiate Dictionary, in pertinent part (emphasis added), sets forth:

> *phosphorescence*: luminescence that is caused by the absorption of radiations (as light or electrons) and continues for a noticeable time after these radiations have stopped
>
> *fluorescence*: luminescence that is caused by the absorption of radiation at one wavelength followed by nearly immediate reradiation usually at a

different wavelength and that ceases almost at once when the incident radiation stops

With this difference in mind, Applicants would like the Examiner to consider the following arguments.

Masi is directed to an integrated liquid crystal luminophor display. While Masi describes a luminescence device comprising a pair of electrodes and an organic compound layer having a liquid crystal compound and a luminophor, Masi fails to teach or suggest the use of a liquid crystal compound having the presently claimed characteristics. More specifically, Masi does not teach or suggest the use of a liquid crystal compound having either of an electronic carrier-transporting function or a phosphorescent function, let alone does it teach or suggest the use of a liquid crystal compound possessing both functions. This deficiency is acknowledged by the Examiner and alleged to be overcome by the disclosure of Hanna. In addition, the luminophor of Masi is very different from the organic phosphorescent compound of the present invention, as the former emits a characteristic color by applying ultraviolet illumination, and the latter phosphoresces by passing a current between electrodes.

Hanna does not remedy the deficiencies of Masi. The Examiner states that Hanna discloses a liquid crystal compound having both charge transferability and fluorescence. This disclosure is not the same as a teaching of a liquid crystal compound having both carrier-transport function and phosphorescent function. See discussion above. Further, beyond that difference, Hanna does not disclose or suggest the use of such a fluorescent compound with a phosphorescent compound as presently claimed, i.e., a

combination of (a) a liquid crystal compound having an electronic carrier-transporting function and a phosphorescent function and (b) an organic phosphorescent compound which is a heavy metal coordination compound which phosphoresces upon passing of a current between electrodes.

Bock does not remedy the deficiencies of Masi and Hanna. In fact, Bock is cited merely for its alleged disclosure of a liquid crystal compound assuming a discotic phase so as to obtain a stable homeotropic monodomain alignment. Bock does not disclose or suggest the use of a liquid crystal material having both carrier-transport and phosphorescent function in an organic compound layer of a luminescence device.

In sum, none of the cited references, whether considered alone or in any combination, render the present inventive luminescence devices obvious. There is simply no teaching or suggestion of the key features of the present invention, namely, a luminescence device comprising a pair of electrodes and at least one organic compound layer comprising (a) a mixture of a liquid crystal compound having an electronic carrier-transporting function and a phosphorescent function and (b) an organic phosphorescent compound, wherein the organic phosphorescent compound is an organic metal coordination compound having a heavy metal as a central metal, and wherein phosphorescence attributable thereto is produced by passing a current between the pair of electrodes. Accordingly, Applicants respectfully request withdrawal of the §103 prior art rejections.

In view of the foregoing amendments and remarks, favorable reconsideration and passage to issue of the present case is respectfully requested. Should the Examiner believe that issues remain outstanding, the Examiner is respectfully requested

to contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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